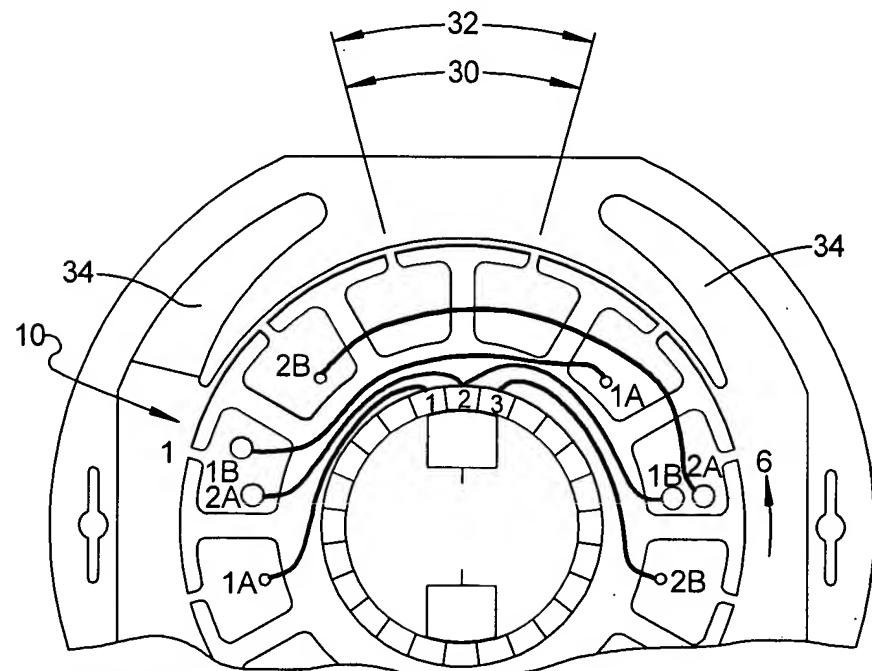
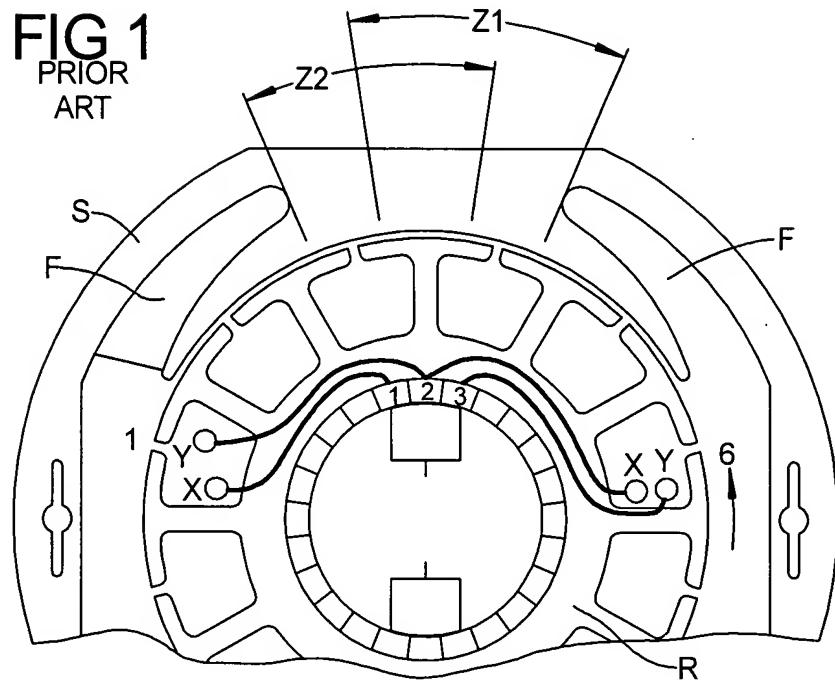




**FIG 1**

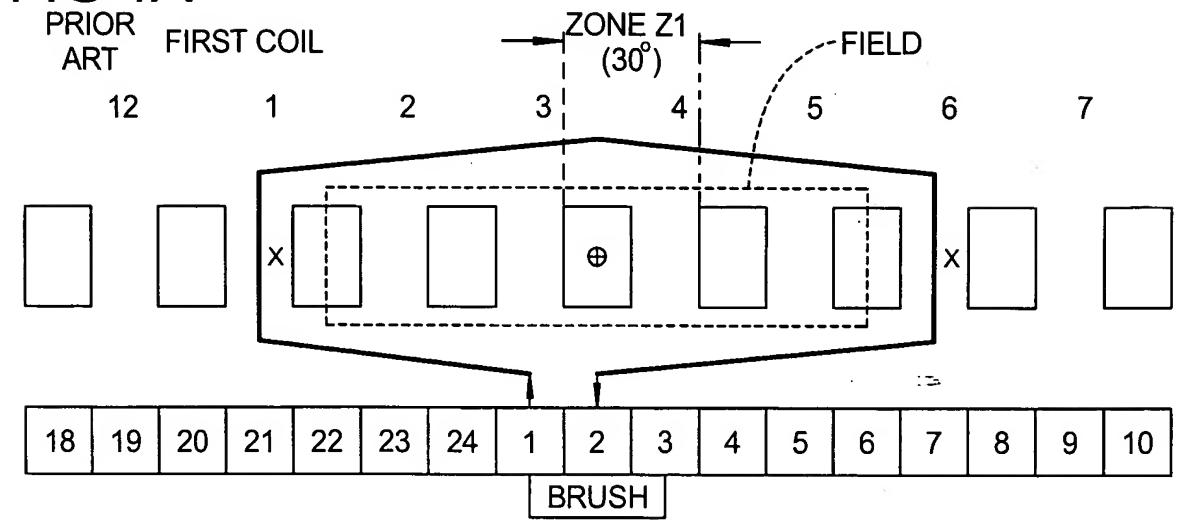
PRIOR  
ART



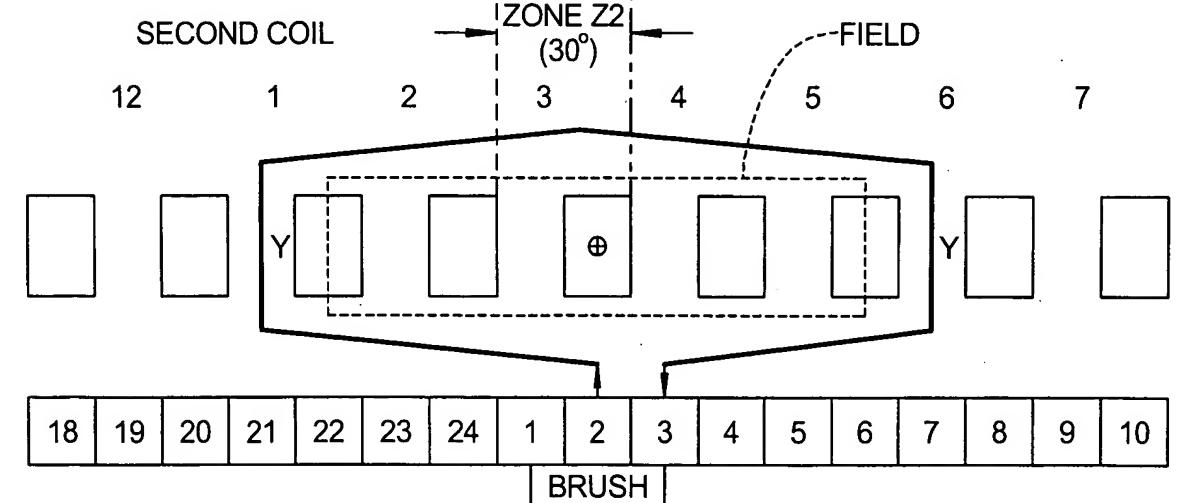
**FIG 5**

**FIG 1A**

PRIOR  
ART      FIRST COIL



SECOND COIL



⊕ MAGNETIC AXIS OF TOTAL COIL

— - - - - AXIS OF FIELD POLE AND BRUSH

— - - - - POSITION OF MAGNETIC AXIS AT START OF COMMUTATION

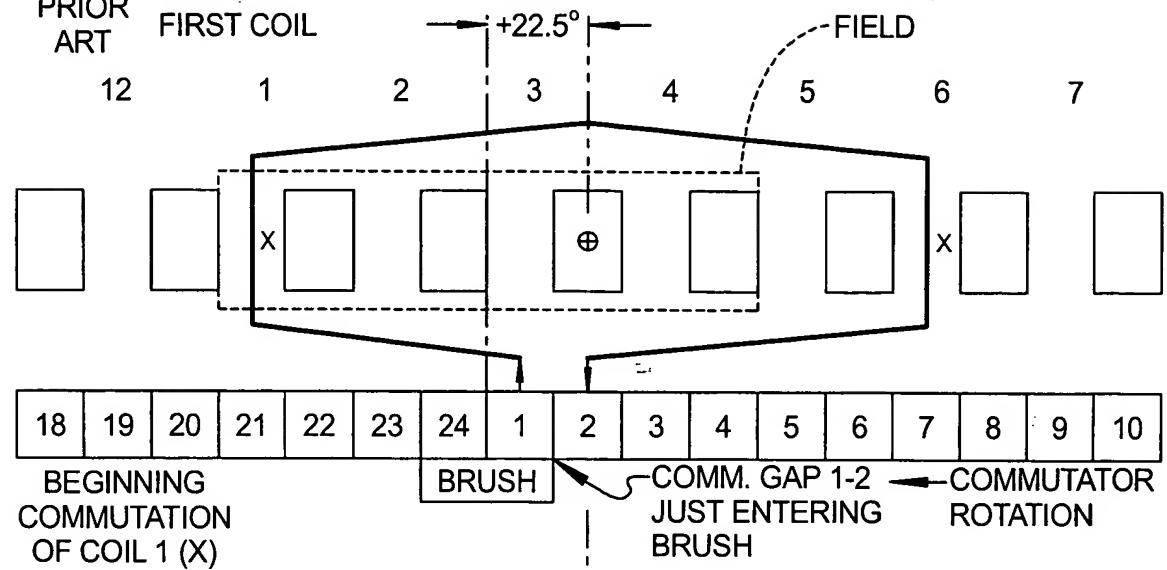
— - - - - POSITION OF MAGNETIC AXIS AT END OF COMMUTATION

**FIG 1B**  
PRIOR  
ART

**FIG 1C**

PRIOR  
ART

FIRST COIL



SECOND COIL

12

1

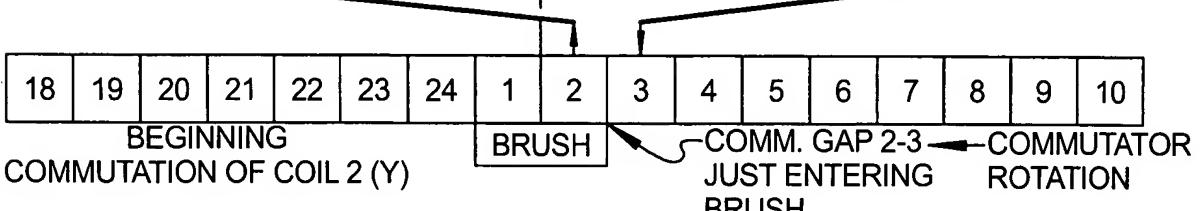
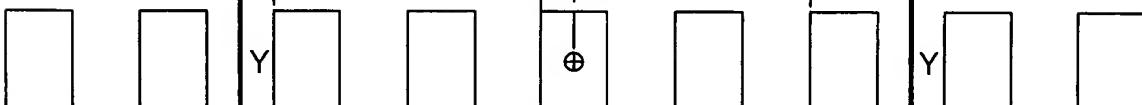
2

3

FIELD

6

7



⊕ MAGNETIC AXIS OF TOTAL COIL

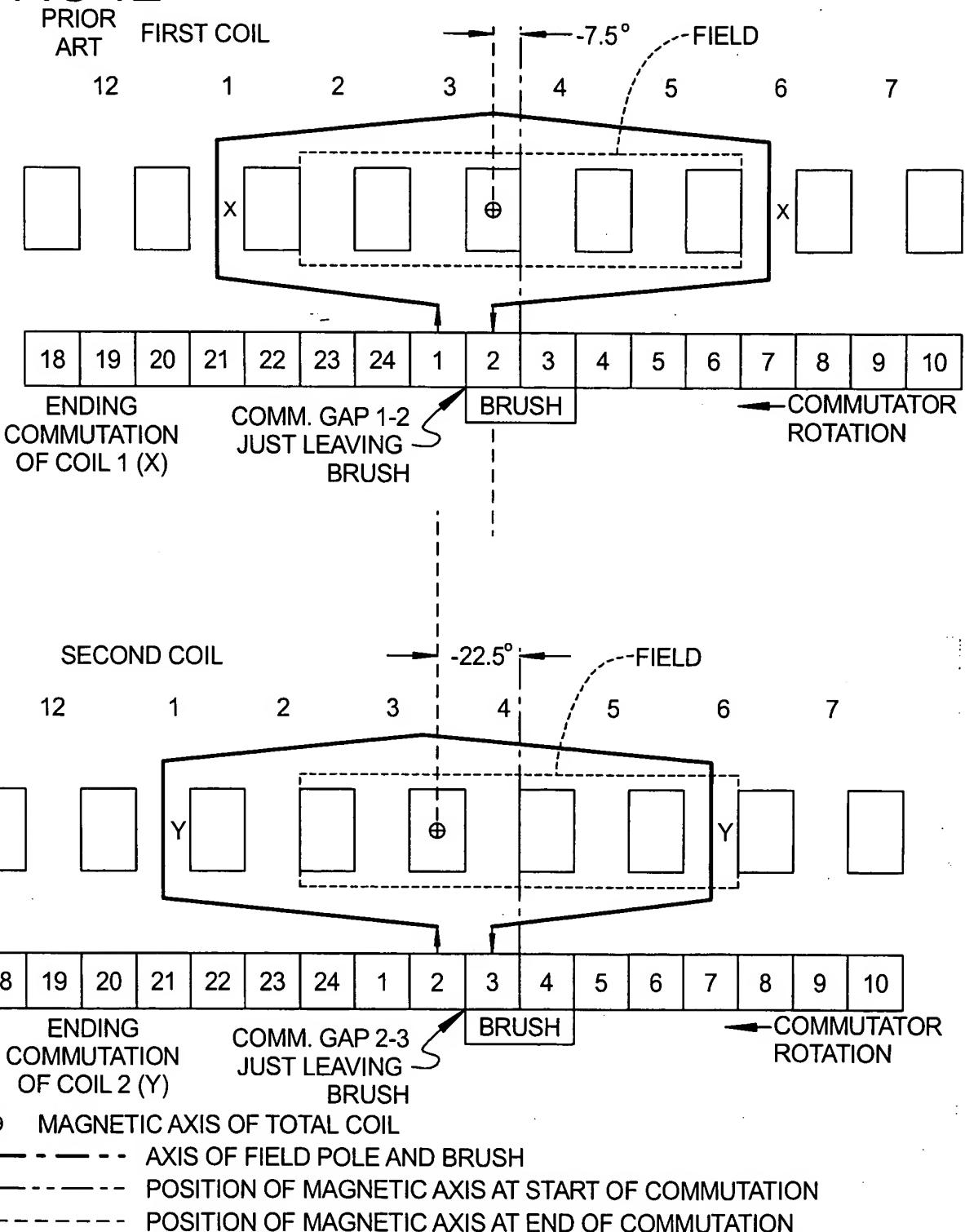
— - - - - AXIS OF FIELD POLE AND BRUSH

— - - - - POSITION OF MAGNETIC AXIS AT START OF COMMUTATION

— - - - - POSITION OF MAGNETIC AXIS AT END OF COMMUTATION

**FIG 1D**  
PRIOR  
ART

**FIG 1E**



**FIG 1F**

PRIOR ART

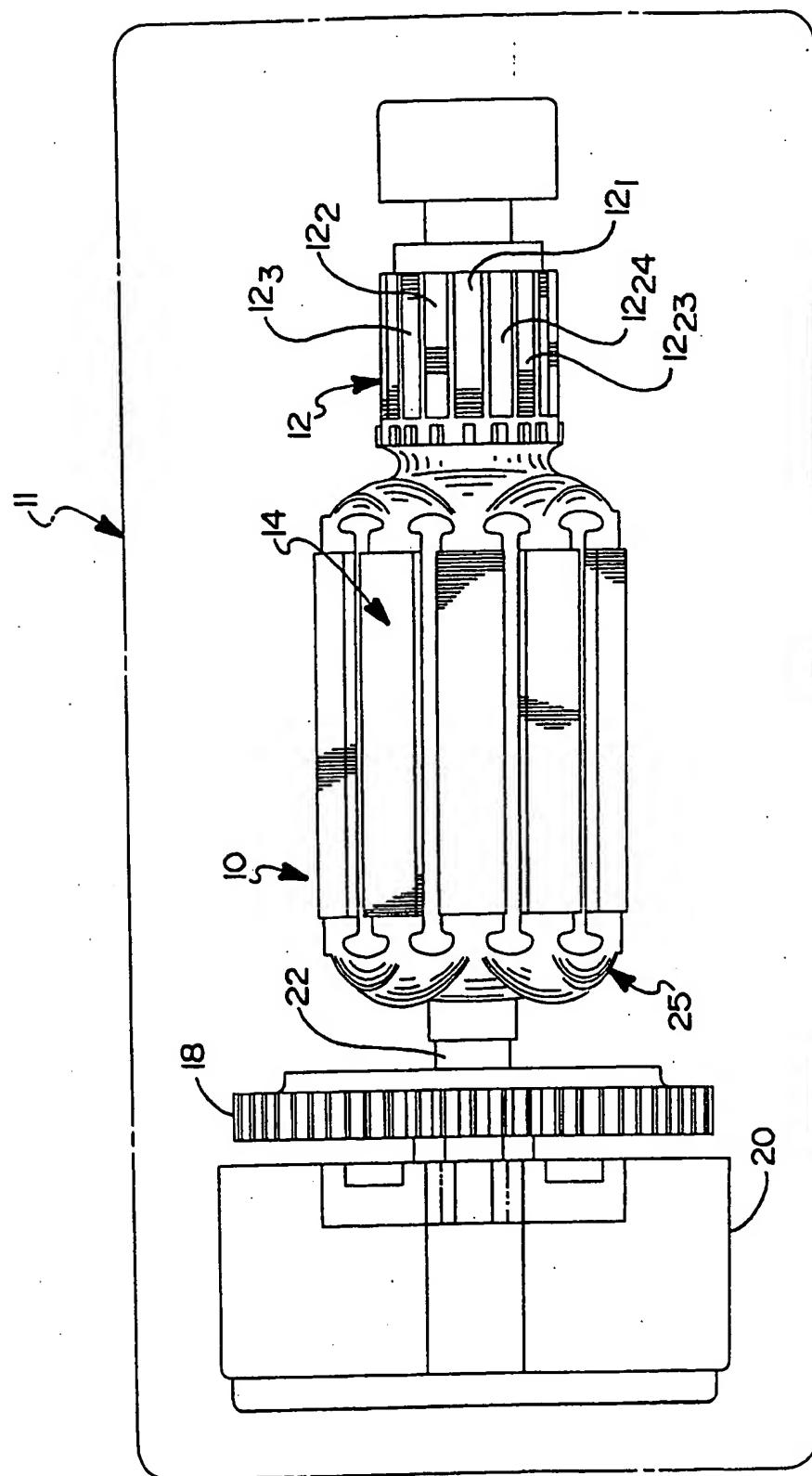
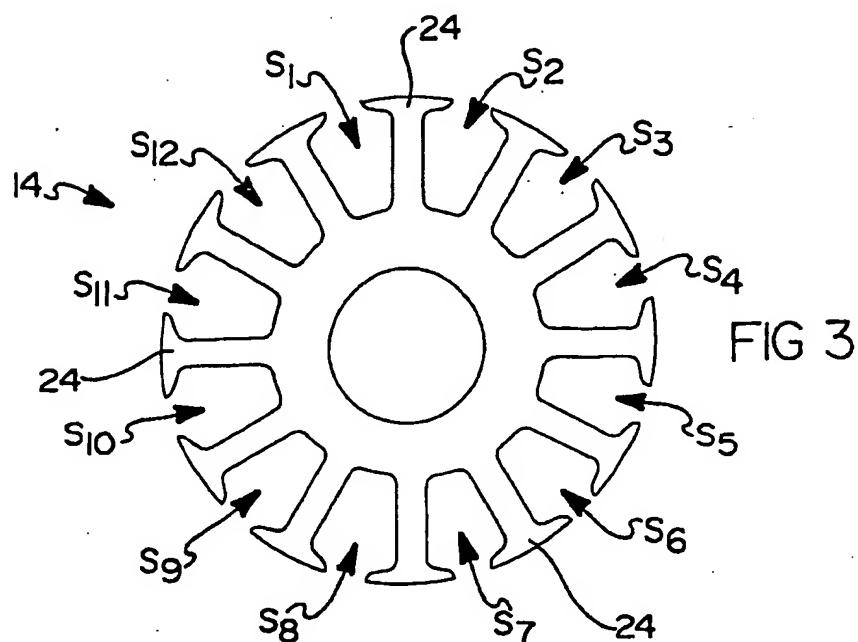


FIG 2



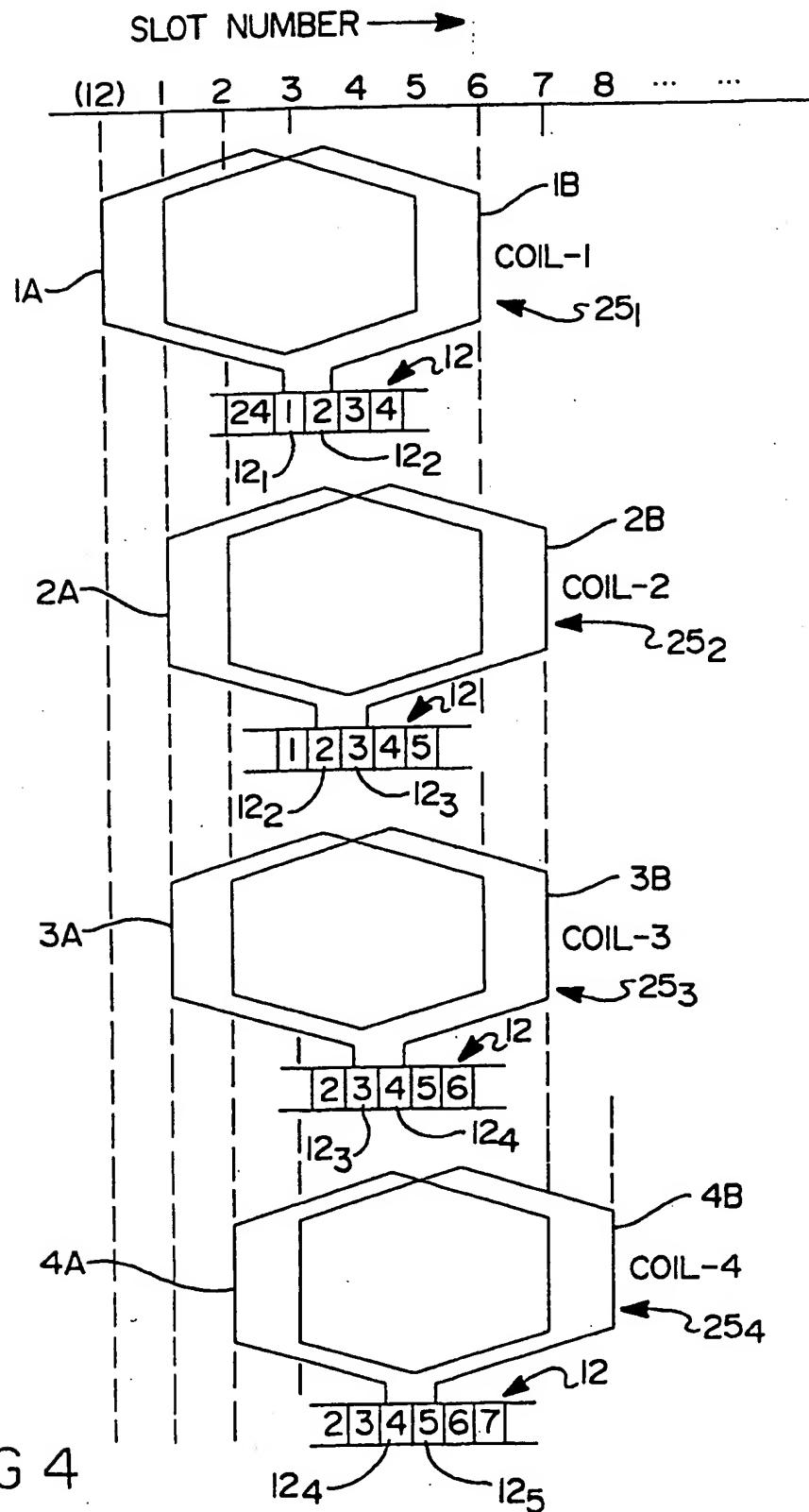
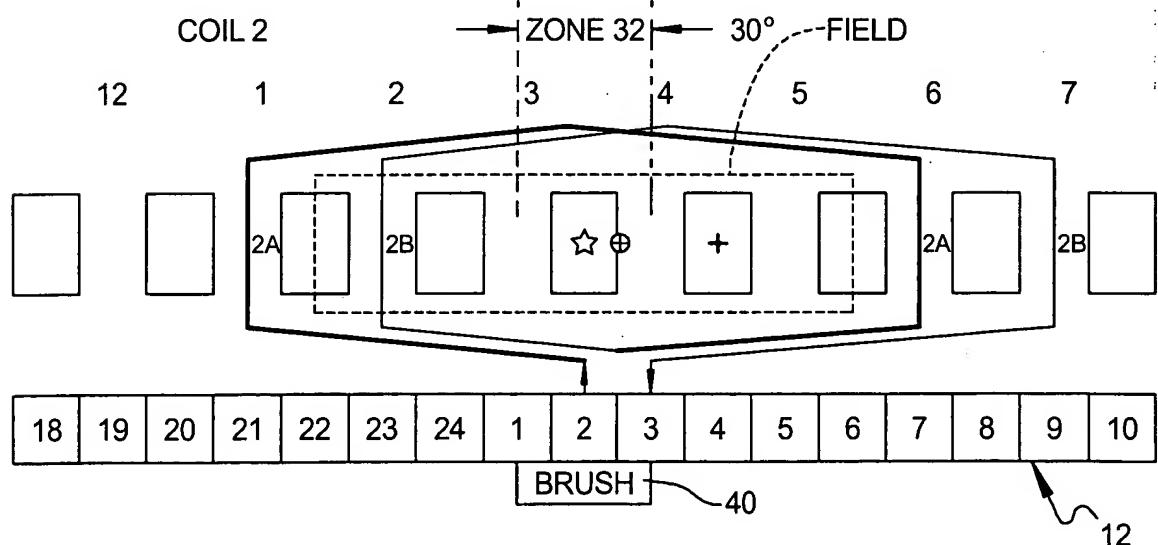
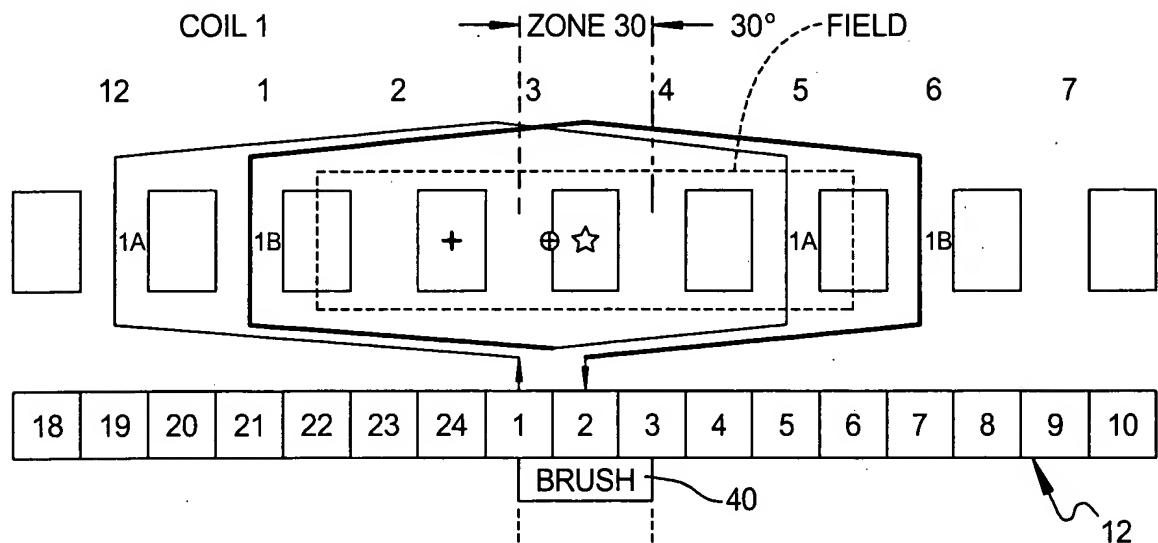


FIG 4

**FIG 5A**



- ★ MAGNETIC AXIS OF LARGER SUBCOIL
- + MAGNETIC AXIS OF SMALLER SUBCOIL
- ⊕ MAGNETIC AXIS OF TOTAL COIL (RESULTANT)

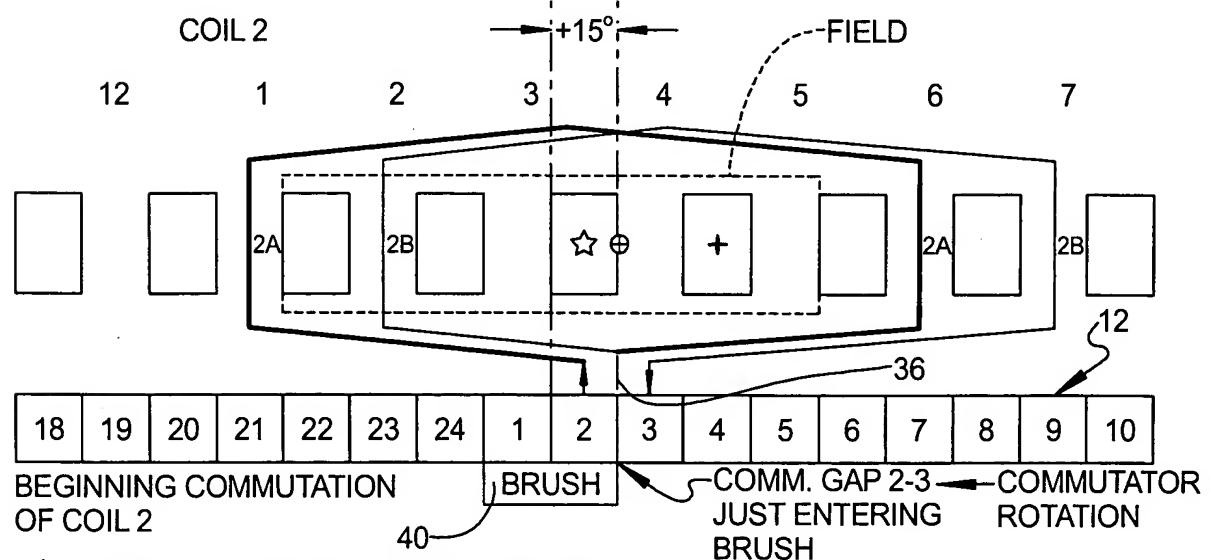
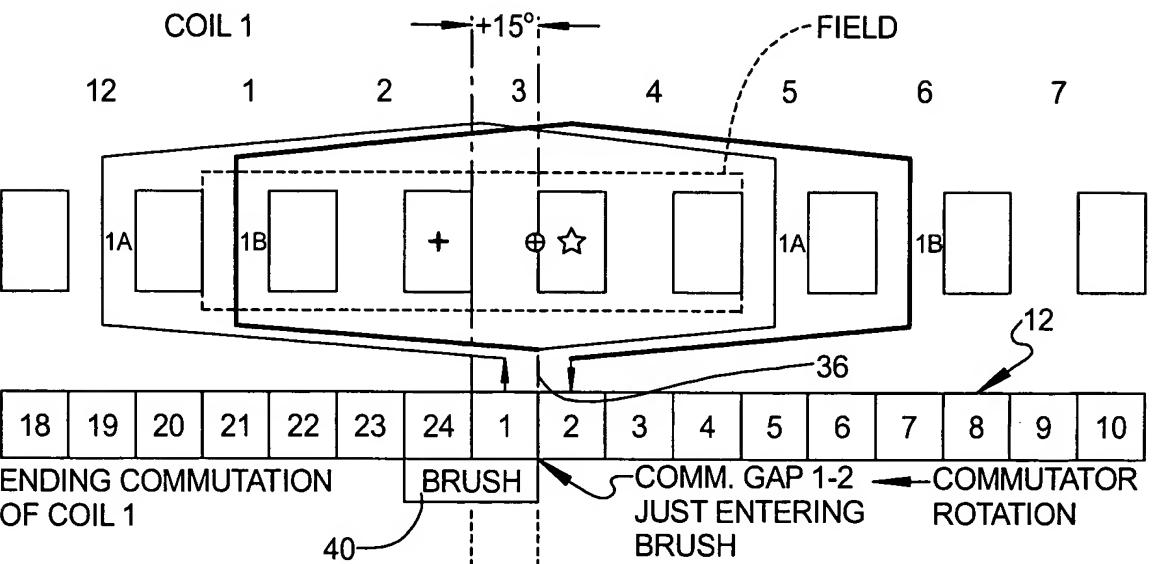
— - - - - AXIS OF FIELD POLE AND BRUSH

— - - - - POSITION OF MAGNETIC AXIS AT START OF COMMUTATION

— - - - - POSITION OF MAGNETIC AXIS AT END OF COMMUTATION

**FIG 6A**

**FIG 5B**



- ★ MAGNETIC AXIS OF LARGER SUBCOIL
- + MAGNETIC AXIS OF SMALLER SUBCOIL
- ⊕ MAGNETIC AXIS OF TOTAL COIL (RESULTANT)

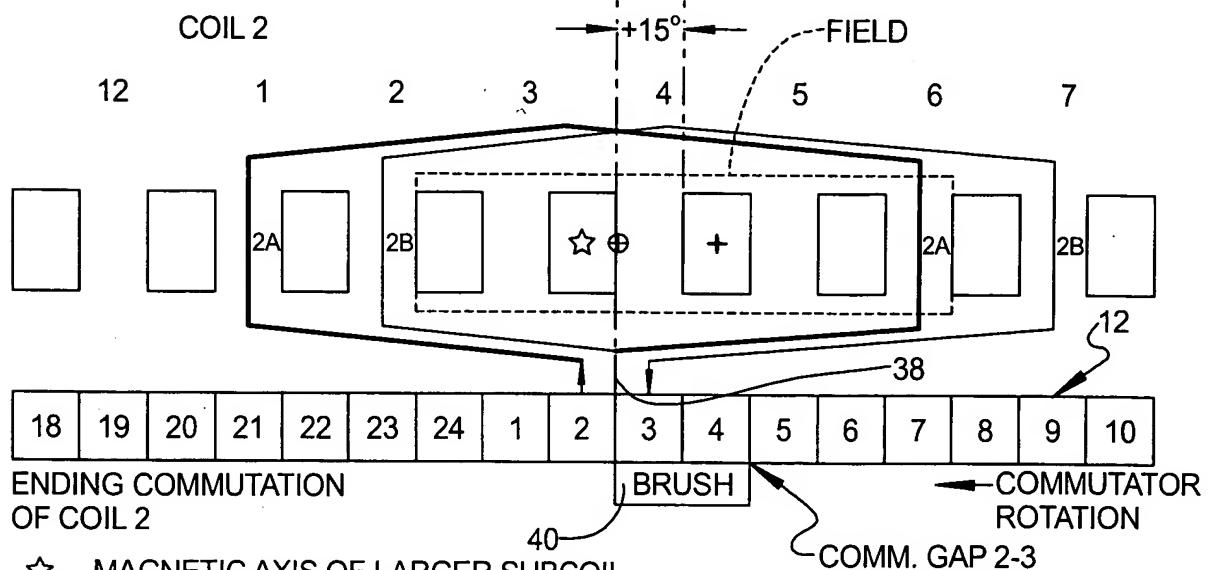
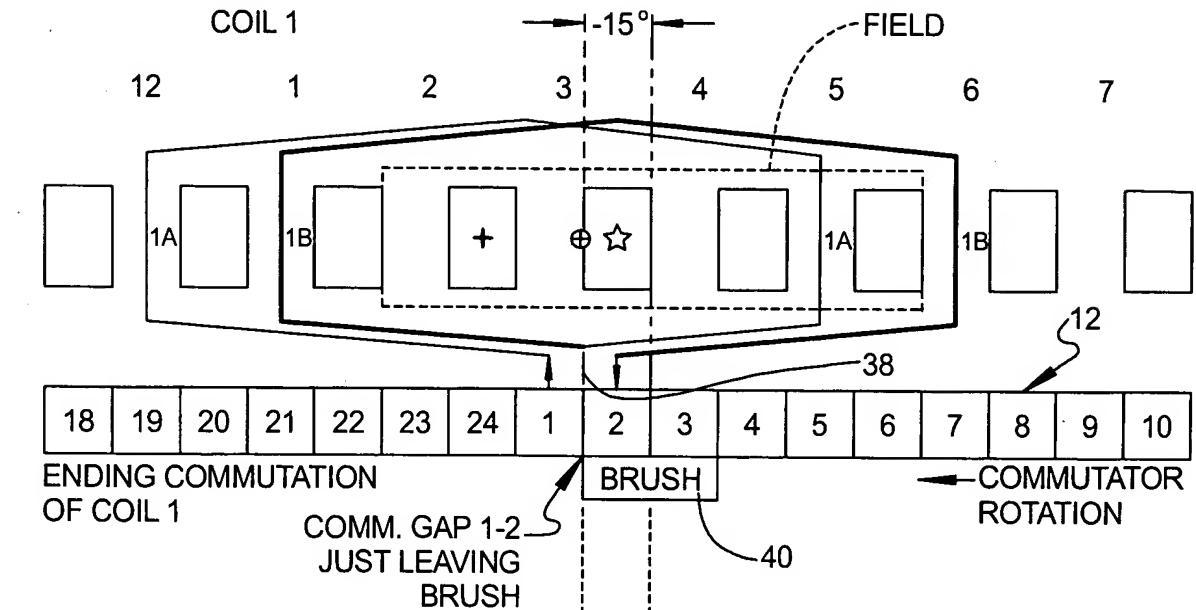
— — — — AXIS OF FIELD POLE AND BRUSH

— — — — POSITION OF MAGNETIC AXIS AT START OF COMMUTATION

— — — — POSITION OF MAGNETIC AXIS AT END OF COMMUTATION

**FIG 6B**

**FIG 5C**



- ★ MAGNETIC AXIS OF LARGER SUBCOIL
- ⊕ MAGNETIC AXIS OF SMALLER SUBCOIL
- ⊕ MAGNETIC AXIS OF TOTAL COIL (RESULTANT)

— - - - - AXIS OF FIELD POLE AND BRUSH

— - - - - POSITION OF MAGNETIC AXIS AT START OF COMMUTATION

— - - - - POSITION OF MAGNETIC AXIS AT END OF COMMUTATION

**FIG 6C**